Mark A. Emmert, President   June 5, 2006

Acting Dean Mani Soma
College of Engineering
Box 352180

Dear Mani:

Based on the recommendation of its Subcommittee on Admissions and Programs, the Faculty Council on Academic Standards has recommended approval of the revised requirements for a Bachelor of Science in Computer Science. A copy of the changes is attached.

I am writing to inform you that the Department of Computer Science and Engineering is authorized to specify these requirements beginning autumn quarter 2006.

The new requirements should be incorporated in printed statements and in individual department websites as soon as possible. The *General Catalog* website will be updated accordingly by the Registrar's Office.

Sincerely yours,

Mark A. Emmert
President

Enclosure

cc: Crystal Eney (with enclosure)
       Mr. Robert Corbett (with enclosure)
       Dr. Deborah Wiegand (with enclosure)
       Todd Mildon, J.D. (with enclosure CSE-20060405)

Creating & Changing Undergraduate Academic Programs

College: __Arts & Sciences_____ Department or Unit: Computer Science & Engineering   Date: 4/5/06

New Programs

☐ Leading to a Bachelor of _____*in*_____ *degree*
☐ Leading to a Bachelor of _____ *degree with a major in* _____
☐ Leading to a _____Option *within the existing major in* _____
☐ Leading to a Minor *in* _____

Changes to existing programs

☐ New Admission Requirements for the Major *in* _____ *within the Bachelor of*_____
☐ Revised Admission Requirements for the Major *in* _____ *within the Bachelor of*_____
X Revised Program Requirements for the Major *in* _Computer Science__*within the Bachelor of Science*
☐ Revised Requirements for the Option *in* _____*within the major in* _____
☐ Revised Requirements for the Minor *in* _____

Other Changes

☐ Change name of program *from* _____*to*_____
☐ New or Revised Continuation Policy *for*_____
☐ Eliminate program *in*_____

Proposed Effective Date: *(quarter/year)* ____Autumn/2006_____

Contact Person	Phone Number	Email
Crystal Eney	206-685 7571	ceney@cs.washington.edu

1.   **Explanation of and Rationale for Proposed Change:** (*Please use additional pages if necessary. For new programs, please include any relevant supporting documentation such as student learning outcomes, projected enrollments, letters of support, and departmental handouts.*)

We would like to add CSE 303 to the core requirements for Computer Science. After the revisions several years ago to the CSE 142/143 introductory programming courses, those courses now teach programming at a higher level, using Java, which is more appropriate for beginning programmers. However, more sophisticated programmers also need to know lower-level programming skills, including C programming, need to know how to control their operating system and programming tools, and need to know how to work in groups. This course provides an introduction to these topics, and allows later courses in our majors to assume this background. This course also exposes students to a number of areas where computer systems interact with society, including privacy and security, software reliability, intellectual property, and electronic voting.

With the addition of CSE 303 to the core requirements, we want to reduce the number of required CSE senior electives in order to minimize the overall impact on the students progress through the program.

* *For information about when and how to use this form please go to http://www.washington.edu/faculty/facsenate/councils/fcas/1503/.*

2. Catalog Copy

A. Catalog Copy as Currently Written *(Include only sections/paragraphs that would be changed if your request is approved. Please cross out or otherwise highlight any deletions.)*

Major Requirements

84-87 credits as follows:

1. *Science (10 credits):* 10 credits from the list of approved natural science courses in the CS&E Handbook. Courses that meet the department's science requirement include PHYS 121, CHEM 142/145, and any course in biology, chemistry, physics, earth and space sciences, astronomy, and atmospheric sciences that requires PHYS 121 or CHEM 142/145 as a prerequisite.

2. *Mathematics (19-22 credits):* MATH 124, MATH 125, MATH 126, (or MATH 134, MATH 135, MATH 136); MATH 308 or MATH 318 (waived if MATH 136 taken); MATH/STAT 390 or MATH/STAT 391.

3. *Required Courses (32 credits):* CSE 142, CSE 143, CSE 321, CSE 322, CSE 326, CSE 341, CSE 370, CSE 378.

4. *Senior Electives (minimum of 23 credits):* At least 23 credits from the senior electives courses listed in the CS&E Handbook, including at least four of the following courses: CSE 401, CSE 403, CSE 421, CSE 431, CSE 444, CSE 451, CSE 455, CSE 457, CSE 461, CSE 471, CSE 473.

5. The minimum acceptable grade for any required or elective CSE course is 2.0. A student's overall GPA must not fall below 2.00. Transfer students must earn a minimum of 24 graded credits toward the major at the UW.

B. Proposed Catalog Copy, Reflecting Requested Changes *(Include exact wording as you wish it to be shown in the printed catalog. Please underline or otherwise highlight any additions. If needed, attach a separate, expanded version of the changes that might appear in department publications.)*
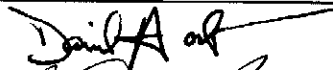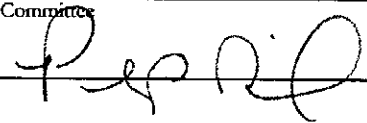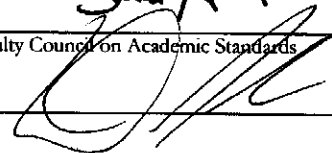
Major Requirements

84-87 credits as follows:

6. *Science (10 credits):* 10 credits from the list of approved natural science courses in the CS&E Handbook. Courses that meet the department's science requirement include PHYS 121, CHEM 142/145, and any course in biology, chemistry, physics, earth and space sciences, astronomy, and atmospheric sciences that requires PHYS 121 or CHEM 142/145 as a prerequisite.

7. *Mathematics (19-22 credits):* MATH 124, MATH 125, MATH 126, (or MATH 134, MATH 135, MATH 136); MATH 308 or MATH 318 (waived if MATH 136 taken); MATH/STAT 390 or MATH/STAT 391.

8. *Required Courses (35 credits):* CSE 142, CSE 143, CSE 303, CSE 321, CSE 322, CSE 326, CSE 341, CSE 370, CSE 378.

9. *Senior Electives (minimum of 20 credits):* At least 20 credits from the senior electives courses listed in the CS&E Handbook, including at least four of the following courses: CSE 401, CSE 403, CSE 421, CSE 431, CSE 444, CSE 451, CSE 455, CSE 457, CSE 461, CSE 471, CSE 473. *CSE 466*

   The minimum acceptable grade for any required or elective CSE course is 2.0. A student's overall GPA must not fall below 2.00. Transfer students must earn a minimum of 24 graded credits toward the major at the UW.

3. Signatures *(required)*

Chair/Program Director	Date	Dean	Date
	4/11/06		MAY 0 9 2006
College Committee	Date MAY 0 9 2006	Faculty Council on Academic Standards	Date 6-2-06

CSE 303: Concepts and Tools for Software Development
Course Information and Syllabus
Winter 2006

Logistics and Contact Information: The instructor is Dan Grossman. See the course homepage (www.cs.washington.edu/education/courses/cse303/06wi) for information about teaching assistants, office hours, etc. *You must join the class email list and check email at least once every 24 hours.*

Goals: Successful course participants will:

- Develop the skills necessary to automate common computing tasks such as file-manipulation and string-processing

- Internalize C-level programming and obtain beginning proficiency in C programming

- Appreciate common programming tools including debuggers, profilers, linkers, recompilation managers, and version-control systems

- Practice valuable software-engineering practices regarding specification and testing

- Critically evaluate several societal/ethical implications of computing and develop the intellectual maturity to evaluate new issues as they arise

Grading and Exams:

Midterm	20%	February 8, in class
Final	20%	March 16, 8:30–10:20
Homeworks	50%	approximately weekly (probably 7 total)
Short "Issue" Paper	10%	to be described later

Unless announced otherwise, all homeworks contribute equally to the 50%.

Late Policy: Homework will always be due at 9:00AM on the due date. This deadline is strict. Therefore, it is exceedingly unlikely that skipping class or being late to class because of homework is in your interest. For the entire quarter, you may have three "late days". You are strongly advised to save them for emergencies. You may not use more than two for the same assignment. They must be used in 24-hour chunks.

Academic Integrity: Any attempt to misrepresent the work you did will be dealt with via the appropriate University mechanisms, and your instructor will make every attempt to ensure the harshest allowable penalty. The guidelines for this course and more information about academic integrity are in a separate document. *You are responsible for knowing the information in that document.*

Text: There are two books listed for the course.

- Linux Pocket Guide by Daniel J. Barrett, O'Reilly, 2004.

- C: A Reference Manual (5th Edition) by Samuel P. Harbison, Guy L. Steele. Prentice Hall, 2002.

See the course webpage for a discussion of the texts' requiredness.

Advice: This course will expose you to a tremendous number of tools, concepts, and issues. Be warned:

- The unease felt when using new tools will be a constant energy drain because you will constantly learn new tools.

- The lectures will *not* teach the tools with enough detail to do the homework. Rather, they will give you the concepts behind the tools and enough to point you in the right direction.

- You will not master everything in 10 weeks, but you will learn enough to continue increasing proficiency and more easily learn computer science.

- If you find yourself spending an enormous amount of time on a homework, it's likely because you are missing a key concept. If so, spending more time "fighting through it" is not effective; use yourself and course staff to determine what you're missing.

Approximate Topic Schedule: This schedule is *subject to change* and probably has more than we have time for. We will do most of it.

1. Societal/ethical implications of computing

    (a) 4–5 *discussions* on topics to-be-announced

    (b) *interspersed in the course*

    (c) example topics: software patents, digital privacy, digital rights management, software licensing, software-engineer certification, the digital divide, accessibility, software security, electronic voting

2. Files, processes, and shells (2.5 weeks)

    (a) Command-line utilities

    (b) File editing

    (c) Shell scripting

    (d) String processing; regular expressions

    (e) Web scripting (cgi, http, html)

    Note: For the sake of consistency, we will all use Linux and bash. The concepts are similar for other operating systems and shells.

3. C Programming (2.5 weeks)

    (a) Memory model

    (b) Pointers

    (c) Arrays

    (d) Manual resource management

    (e) Idioms for safe programming

    (f) Hint of C++

4. Programming tools (2 weeks)

    (a) Debuggers

    (b) Profilers

    (c) Linkers

    (d) Libraries

    (e) Compilation managers

    (f) Version-control systems

5. Software-engineering issues (1.5 weeks)

    (a) Multiperson programming

    (b) Specification

    (c) Testing

    (d) Code-reuse patterns

6. Threads (.3 weeks)

CSE 303: Concepts and Tools for Software Development

Winter 2006

Course Information

Syllabus
Academic-Integrity Policy
Extra-Credit Policy
Anonymous Feedback
Meetings: MWF 12:30-1:20, MGH 231

Our midterm: without solutions   with solutions
Our final: without solutions   with solutions
Sample midterm: without solutions   with solutions
Sample final: without solutions   with solutions

Staff

Instructor: Dan Grossman, djg@cs.washington.edu, Allen Center Room 556
  (careful: the userid equal to the instructor's last name belongs to a **different person**)
TA: Benjamin Ylvisaker ben8@cs.washington.edu
TA: Robert Spies wilford@cs.washington.edu

Office hours:
  Grossman: Tuesdays 2-3, Fridays 1:30-2:30, and by appointment
  Ylvisaker: Mondays 3:30-4:30, and by appointment
  Spies: Thursdays 12:30-1:30, and by appointment in CSE 002

Course Glossary

Homework

Homework 1, due Monday January 16, 9:00AM
Homework 2, due Friday January 27, 9:00AM   example output   mycat2buggy
  (example input mailed to you directly and via a web link)
Homework 3, due Friday February 3, 9:00AM   points.c   wordfind.c
Homework 4, due Monday Feburary 13, 9:00AM   hw4.tar
Homework 5, due Wednesday February 22, 9:00AM 5A 5B 5C (do the one your groupmates are not doing)
Homework 6, due Wednesday March 1, 9:00AM
Homework 7, due Friday March 10, 9:00AM   takeoutTester skeleton   example output

Short Paper, due Friday March 10, 9:00AM description example

Class Materials

X. Jan 2: Holiday
1. Jan 4: Course Introduction, Shell Basics   slides   shell history
2. Jan 6: Processes, Users, Shell Special Characters, Emacs   slides   shell history
3. Jan 9: I/O Redirection, Shell Scripts   slides   shell history   scripts
  Hint for accessing the scripts: tar -xf lec3scripts.tar (see man tar)
4. Jan 11: Shell Variables, More Shell Scripts   slides   shell history   scripts
5. Jan 13: Regular Expressions (and more), grep, Other Utilities   slides   shell history
X. Jan 16: Holiday
6. Jan 18: sed, command-line-tools wrap-up slides   sed programs
7. Jan 20: Introduction to C   slides
8. Jan 23: C: locals, left vs. right expressions, dangling pointers   slides   sums.c   pointers.c
9. Jan 25: C: structs, the heap and manual memory-management   slides   structs.c
10. Jan 27: Societal implications: Responsibility for web data   links   slides
11. Jan 30: C: casts, linked lists slides   code
12. Feb 1: The C Pre-Processor; printf and scanf slides examples
13. Feb 3: C: Function-Pointers; Post-Overview slides   code

14. Feb 6: Societal Implications: Software Quality, Licensing, Patents, ... slides
X. Feb 8: Midterm
15. Feb 10: Debuggers, e.g., gdb slides code gdb manual
16. Feb 13: Profilers, e.g., gprof slides code gprof manual
17. Feb 15: Testing, stubs, specification slides code
18. Feb 17: Build scripting, make slides
X. Feb 20: Holiday
19. Feb 22: Version control, cvs slides shell history more info
20. Feb 24: Societal implications: Future/purpose of computer science (education) slides links
21. Feb 27: Linkers, Libraries, Archives slides
22. March 1: Linking wrapup; Threads, concurrency slides
23. March 3: Security, defensive programming slides security_eg.c security_eg.sh
24. March 6: Societal implications: Voting links slides
25. March 8: Memory-management idioms slides
26. March 10: Wrap-up, taste of C++ slides C++ code

Textbooks

Are the texts required?
Linux Pocket Guide by Daniel J. Barrett, O'Reilly, 2004.
C: A Reference Manual (5th Edition) by Samuel P. Harbison, Guy L. Steele. Prentice Hall, 2002.

Other Resources

A Quick-And-Dirty Getting-Started Guide OS X Addendum
Your ACM Chapter's tutorials
The CSE department's Computing Resources for Undergrads
More than enough HTML for Homework 2
The Bash Manual

Preliminaries

Join the course mailing list
Homework 0 "due" January 6, worth zero points

.

Creating & Changing Undergraduate Academic Programs

College: __Arts & Sciences_____ **Department or Unit:** Computer Science & Engineering   April 25, 2006

New Programs
☐ Leading to a Bachelor of _____ in _____ *degree*
☐ Leading to a Bachelor of _____ *degree with a major in* _____
☐ Leading to a _____ Option *within the existing major in* _____
☐ Leading to a Minor *in* _____

Changes to existing programs
☐ New Admission Requirements for the Major *in* _____ *within the Bachelor of* _____
☐ Revised Admission Requirements for the Major *in* _____ *within the Bachelor of* _____
X Revised Program Requirements for the Major *in* _Computer Science__ *within the Bachelor of Science*
☐ Revised Requirements for the Option *in* _____ *within the major in* _____
☐ Revised Requirements for the Minor *in* _____

Other Changes
☐ Change name of program *from* _____ *to* _____
☐ New or Revised Continuation Policy *for* _____
☐ Eliminate program *in* _____

Proposed Effective Date: *(quarter/year)* ____Autumn/2006_____

Contact Person	Phone Number	Email
Crystal Eney	206-685 7571	ceney@cs.washington.edu

1. **Explanation of and Rationale for Proposed Change:** (*Please use additional pages if necessary. For new programs, please include any relevant supporting documentation such as student learning outcomes, projected enrollments, letters of support, and departmental handouts.*)

Embedded systems are becoming ever more commonplace and the software developed for these systems has very different properties and concerns than desktop application software.

We wish to include CSE 466 as one of the allowable CSE elective courses for the Computer Science majors to provide in-depth understanding of embedded software systems from low-level device drivers to applications and their user interfaces and to give students extensive programming experience using modern embedded systems development platforms and tools.

* For information about when and how to use this form please go to http://www.washington.edu/faculty/facsenate/councils/fcas/1503/.

2. Catalog Copy

A. Catalog Copy as Currently Written *(Include only sections/paragraphs that would be changed if your request is approved. Please cross out or otherwise highlight any deletions.)*

Major Requirements

84-87 credits as follows:

1. *Science (10 credits):* 10 credits from the list of approved natural science courses in the CS&E Handbook. Courses that meet the department's science requirement include PHYS 121, CHEM 142/145, and any course in biology, chemistry, physics, earth and space sciences, astronomy, and atmospheric sciences that requires PHYS 121 or CHEM 142/145 as a prerequisite.

2. *Mathematics (19-22 credits):* MATH 124, MATH 125, MATH 126, (or MATH 134, MATH 135, MATH 136); MATH 308 or MATH 318 (waived if MATH 136 taken); MATH/STAT 390 or MATH/STAT 391.

3. *Required Courses (32 credits):* CSE 142, CSE 143, CSE 321, CSE 322, CSE 326, CSE 341, CSE 370, CSE 378.

4. *Senior Electives (minimum of 23 credits):* At least 23 credits from the senior electives courses listed in the CS&E Handbook, including at least four of the following courses: CSE 401, CSE 403, CSE 421, CSE 431, CSE 444, CSE 451, CSE 455, CSE 457, CSE 461, CSE 471, CSE 473.

5. The minimum acceptable grade for any required or elective CSE course is 2.0. A student's overall GPA must not fall below 2.00. Transfer students must earn a minimum of 24 graded credits toward the major at the UW.
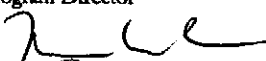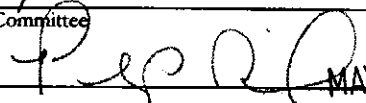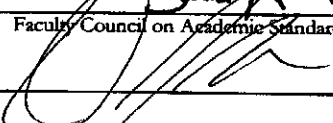

B. Proposed Catalog Copy, Reflecting Requested Changes *(Include exact wording as you wish it to be shown in the printed catalog. Please underline or otherwise highlight any additions. If needed, attach a separate, expanded version of the changes that might appear in department publications.)*
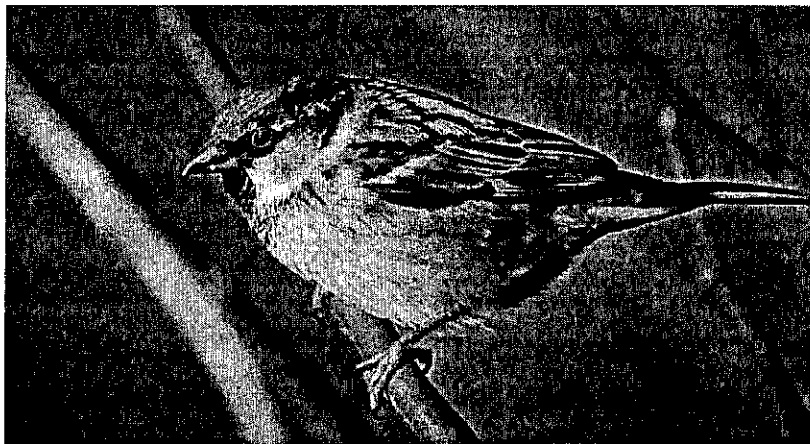
Major Requirements

84-87 credits as follows:

1. *Science (10 credits):* 10 credits from the list of approved natural science courses in the CS&E Handbook. Courses that meet the department's science requirement include PHYS 121, CHEM 142/145, and any course in biology, chemistry, physics, earth and space sciences, astronomy, and atmospheric sciences that requires PHYS 121 or CHEM 142/145 as a prerequisite.

2. *Mathematics (19-22 credits):* MATH 124, MATH 125, MATH 126, (or MATH 134, MATH 135, MATH 136); MATH 308 or MATH 318 (waived if MATH 136 taken); MATH/STAT 390 or MATH/STAT 391.

3. *Required Courses (32 credits):* CSE 142, CSE 143, CSE 321, CSE 322, CSE 326, CSE 341, CSE 370, CSE 378.

4. *Senior Electives (minimum of 23 credits):* At least 23 credits from the senior electives courses listed in the CS&E Handbook, including at least four of the following courses: CSE 401, CSE 403, CSE 421, CSE 431, CSE 444, CSE 451, CSE 455, CSE 457, CSE 461, CSE 466, CSE 471, CSE 473.

5. The minimum acceptable grade for any required or elective CSE course is 2.0. A student's overall GPA must not fall below 2.00. Transfer students must earn a minimum of 24 graded credits toward the major at the UW.

3. Signatures *(required)*

Chair/Program Director	Date	Dean	Date
	4/11/06		MAY 0 9 2006
College Committee	Date	Faculty Council on Academic Standards	Date
	MAY 0 9 2006		6-2-06

Comp Sci

Engr

CSE 466
Spring, 2006
Software for Embedded Systems

Bruce Hemingway
with Karl Koscher

This quarter: Flock V-- Songbirds
the Flock gets the Flu

Organization

Lectures times and office hours
Textbook
Academic Accomodations
Academic Misconduct

Class email

Class E-mail Archive
Send email to the mailing list (cse466@cs)
Add yourself to the mailing list
Send comments using this anonymous feedback form

Coursework

Course Goals & Syllabus
Calendar for Lectures, Exams, Lab Assignments, and Final Exam
Schedule for Labs

Course Software Tools

Computing labs and software tools
Other Resources

CSE466, previous quarters for the Department of Computer Science and Engineering at the University of Washington

Syllabus

Course Description

The course will focus on software issues in embedded systems including use of an advanced 8-bit microcontroller and its development environment, interrupt programming and management, and peripheral interfacing and drivers. Laboratory assignments will use prototyping boards, LEDs, audio transducers, A/D converters, pulse-width modulators, wireless communications, Berkeley Motes and TinyOS.

Grading Policy

There will be two exams, as shown on the class schedule.

Lab reports: Demo usually required

Ratios:
Lab: 50%
Exams total: 20%
Homework: 20%
Class Participation: 10%

Textbooks

Required CoursePak:

We'll be using the Atmel ATmega16 microprocessor extensively, and will refer to the datasheet, which is found at:
http://www.atmel.com/atmel/acrobat/doc2466.pdf   It is ~320 pages.

Hardbound copies of the datasheet as a coursepak, along with selected papers, are available at the Communication Copy Center in the Communications bldg, Rm B-042, cost $33.80.

CSE466 Class Schedule, Lecture Notes, and Lab, Homework and Reading Assignments

Text Reading Assignment	Monday Lecture	Wednesday Lecture	Friday Lecture	Homework	Lab
	3/27 What is an embedded system?	3/29 Microprocessors	3/31 AVR family		no lab
	4/3 Lab Basics	4/5 More AVR	4/7 Interrupt Basics		Lab 1 Assembly
Debugging Hints	4/10 A/D Conversion	4/12 Interfacing	4/14 Interfacing	Ethics- due in class 4/21 ---**Be Ready to participate!**	Lab 2 Interrupts
	4/17 PWM,Color	4/19 Communication	4/21 Computer Ethics Discussion		Lab 3 PWM
	4/24 **Review**	4/26 **Exam I**	4/28 **No Class**- attend the Engineering Open House	Ethics paper due 5/31	Lab 4 SPI/USB
Miranda FM paper TinyOS papers	5/1 Sound & FM Synthesis	5/3 SensorNets	5/5 SensorNets		Lab 5 sound output
TinyOS papers	5/8 TinyOS Programming I	5/10 TinyOS Programming II	5/12 RF & the Radio Stack		Lab 6 TinyOS expe
Flock Paper	5/15 Flock design	5/17 Computer Ethics Discussion	5/19 Flock Discussion	Flock-due in class 5/19	Lab 7 Surge Port sound to
	5/22 Flock Strategy	5/24 Flock Discussion Review	5/26 **Exam II**		Lab 8 Implement tl
	5/29 **Holiday**	5/31 Critical Systems evaluation paper due	6/2 Meet in 003 lab for song check-off		Lab 8, cont. Implement tl
		6/7 **Final Exam time:** 8:30-10:30 am Atrium Flock Sing-a-long--			